

# **IMPROVED METHOD OF CONSTRUCTING A FAN BLADE**

## **Field of the Invention**

The present invention generally relates to fans. More particularly, the present invention is directed toward an improved fan blade that is less expensive to construct and safer to operate than conventional fan blades

## **Background of the Invention**

Fans in general and ceiling fans in particular are well known devices that are used to circulate air for a variety of purposes. These fan blades may be constructed from metal, plastic, wood or other materials. Ceiling fans blades are often constructed from wood due to its aesthetic appeal and softer nature. Due to the width of ceiling fan blades, wooden blades are often constructed from laminated slats of wood that are held together. Such a prior art fan blade is shown in Fig. 1. The blade 2 consists of a series of slats 4 that are held in place by pieces of wood 6 that have been glued in grooves running perpendicular to the slats 2. Unfortunately, these perpendicular pieces of wood tend to break loose and/or warp over time. This is particularly a problem in connection with ceiling fans because the pieces may be ejected into a room where people are present. Therefore, what is needed is an improved method of constructing a fan blade for a ceiling fan.

## **Summary of the Invention**

A preferred embodiment of the present invention is directed toward a fan blade that includes at least two longitudinal slats positioned side by side. At least one hole is constructed through an interior of the at least two longitudinal slats. A dowel is pressed through the hole to secure the two longitudinal slats firmly together. The dowel is preferably a wooden rod that is secured in the hole with an adhesive such as wood glue. The wooden rod may have grooves, notches or splines that improve its ability to bond to the interior of the slats. In an alternative

embodiment, the dowel is a metal rod. A threaded portion may be placed on one end of the metal rod for receiving a screw on cap that secures the dowel in the hole. A fixed cap is rigidly secured to the other end of the dowel. The screw on cap is designed to retract the screw on cap and the fixed cap into the slats when screwed on to the threaded portion. The screw on cap has a portion configured to receive a tool to facilitate its attachment to the dowel. The slats are preferably constructed from a soft wood. In yet another alternative embodiment, both ends of the dowel are threaded to receive threaded end caps. The threaded caps are designed to receive a tool for securing the threaded end caps to the threaded ends of the dowel. A bonding material may be placed over the threaded end caps such that the dowel and the end caps are enclosed within the slats.

### **Brief Description of the Drawings**

**Fig. 1** is a pictorial representation of a prior art method of constructing a fan blade;

**Fig. 2** is a pictorial representation of a preferred embodiment of the present invention; and

**Figs. 3(a) and (b)** are pictorial representations of a dowel or pin for use with an alternative embodiment of the present invention.

### **Detailed Description of the Invention**

Referring now to Fig. 2, a fan blade 10 constructed in accordance with a preferred embodiment of the present invention is shown. The fan blade 10 is constructed from a series of wooden slats 12 and supported by a blade arm 14. The blade arm 14 is attached to a spinning fan wheel (not shown) that rotates the fan blade 10 through the air to produce the desired circulation. The wooden slats 12 have a series of substantially perpendicular holes 16, 18 and 20 that have been drilled through their interior. A dowel 22 is inserted or press fit into each of the perpendicular holes 16, 18 and 20 to hold the slats 12 firmly together. Preferably,

the dowel 22 is wooden and dimensioned such that it can be snugly inserted into the hole 16. In such an embodiment, wood glue is preferably placed around the dowel 22 to further secure it in the hole. In addition, small grooves, notches or splines 23 can be constructed along the length of the dowel 22 to help further secure the dowel 22 in the hole 16. In an alternative embodiment, the dowel 22 is a straight metal rod or pin.

The dowel 22 increases the rigidity of the fan blade 10 by being firmly secured within the interior of the wooden slats 12. In addition, the wooden slats 12 can not warp or peel away from each other or the dowel 22 as was the case with the prior art method of Fig. 1 without breaking the wooden slats 12. This is especially important when used with a ceiling fan in that there is nothing to break loose and be ejected into the room. The added rigidity provided by the dowel 22 also allows softer woods such as pine, medium density fiberboard, etc. to be used to construct the fan blade 10. The use of softer woods is further beneficial in that softer wood is typically less expensive and less likely to injure someone that comes into contact with the fan blades.

An alternative dowel 24 is constructed and installed as set forth in Figs. 3(a) and (b). The dowel 24 is primarily constructed from a rod 25. The rod 25 is constructed from metal, wood, plastic or other similar materials. One end of the rod 25 of the dowel 24 has a truncated cone shaped end 26 that preferably has a maximum diameter that is slightly larger in diameter than the through holes 16, 18 and 20 constructed through the wooden slats 12 as shown in Fig. 2. The other end of the rod 24 has threads 28 that are designed to be received by a hole in a second truncated cone shaped cap 30. Alternatively, both ends of the rod 25 may have threaded ends 28 and screw on end caps 30. A friction fit may also be used to secure the end caps 30 on the dowel 24. The dowel 24 is installed in the wood slats 12 by pressing the rod 25 through one of the through holes 16, 18 or 20 such that the truncated cone shaped end 26 is firmly held against one of the outermost wooden slats 12. The length of the rod 25 is preferably selected such that the threaded end

28 will almost protrude through the outer most wooden slat on the other side. The truncated cone shaped cap 30 is then screwed onto the threaded end 28. In a friction fit embodiment, the end caps 30 could simply be compressed onto the rod 25. The end caps 30 are preferably configured to receive a screw driver or similar tool to facilitate their attachment to the dowel 24 rod 25. The end cap 30 is also preferably secured onto the end 28 such that the cone shaped end 26 and end cap 30 are pulled slightly below the outermost surface of the wooden slats 12 to remove them from view and improve the appearance of the fan blade as shown in Fig. 3(b) . A putty or similar compound is then used to cover the ends 26 and 30 and provide a smooth exterior finish.

The construction set forth above is a substantial improvement upon the prior art. First, the interior location of the dowel reduces the likelihood that the dowel will separate from the slats and be ejected from the fan blades. Second, the dowel provides extra rigidity that prevents warpage and allows softer less expensive and safer materials to be used for the fan blades. Finally, the dowel is completely enclosed by the slats to produce an aesthetically pleasing and stable design.

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